

# MISSOURI. Conservationist

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# Share the Love

Like those who have preceded me, my passion and commitment to conservation started at an early age, by fishing on my grandparents' pond when I was very young and hunting squirrels

with my grandpa. Even though mom thought I was too young to carry a gun, I still had a great time scouting and retrieving squirrels. One of my fondest memories is checking trotlines through the night on the river. We sat by the campfire, and Grandpa and I checked the lines every few hours. During the night, I would catch naps with the rest of the family in the back of our station wagon. To a kid, this was a wonderful adventure.

Later in life, friends and college professors nurtured and shaped my interest in hiking, canoeing, bird watching, camping and other outdoor pursuits. All of this culminated in a conservation career, and now, another new adventure as the Department's wildlife division chief.

I have been part of the Department of Conservation family for 20 years, working with colleagues on many different and exciting projects like peregrine falcon restoration, trading turkeys with other states for critters we needed, and working with many of our staff who manage thousands of acres of wildlife habitat and public use facilities around the state—exciting stuff for the kid from Lebanon, Mo.

I am lucky to be part of a generation with family members who loved the outdoors. There are real opportunities to learn the lessons of life on the riverbank and in the woods, not to mention great fun learning the skills of hunting and fishing. My mom still fishes regularly, taking the grandchildren along and teaching them much the same way that I learned. It's more

difficult with today's busy lives, but this is how it's done.

But this story doesn't begin and end with children. Many adults can learn, too; all they need is a helping hand. Family, friends, birding groups, hunting clubs, fishing clubs, and any other group can play an important role in teaching skills and helping others discover the wonders of nature. After all, our own personal learning is not complete until we teach another what we have learned.

This is just a small part of who I am and what I believe. I have a professional commitment to our natural resources, but I also have a passion for all the things we call fish, forest, and wildlife conservation. As the new wildlife division chief, I will work on your behalf to provide great opportunities for outdoor activities around the state, while striving for superior resource management. We will work together with landowners, other agencies, and organizations committed to conservation to collaborate in ways that ensure the best resource conservation we can muster. And in the end, we promise you access to some of the best land and water in the state, and the opportunity to build memories to last a lifetime. Take the opportunity to teach some of those outdoor skills and life lessons to another, and maybe learn a few new ones yourself.

DeeCee Darrow, wildlife division chief



CLIFF WHITE

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**OUR MISSION:** *To protect and manage the fish, forest and wildlife resources of the state; to serve the public and facilitate their participation in resource management activities; and to provide opportunity for all citizens to use, enjoy and learn about fish, forest and wildlife resources.*

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## NextGEN

This section reports on goals established in *The Next Generation of Conservation*. To read more about this plan, visit [www.MissouriConservation.org/12843](http://www.MissouriConservation.org/12843).

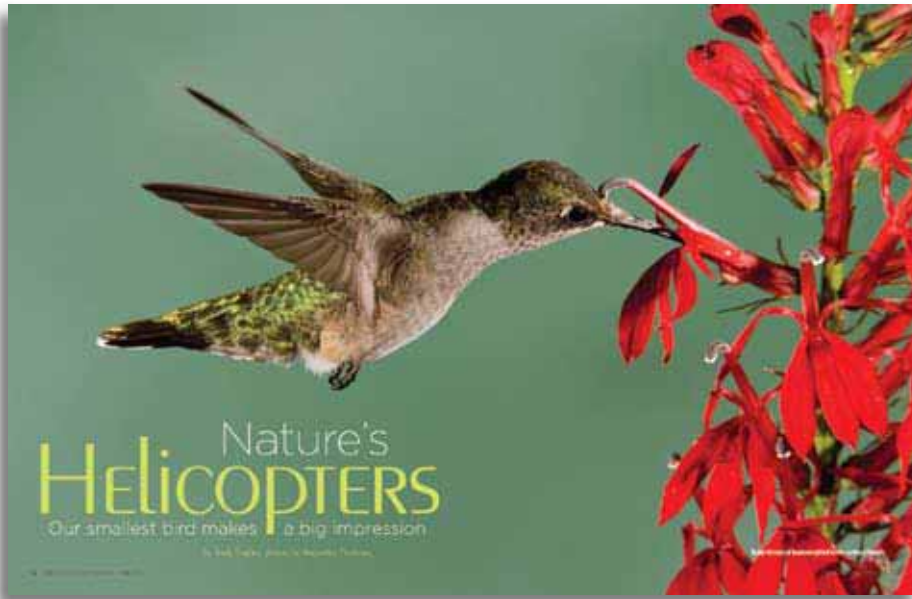
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## HUMMER QUIZ

I have been feeding hummingbirds for over 35 years. I was always told to boil one part sugar to four parts water.

Last year I was watching *Animal Planet*, and they were talking about hummers and said you didn't have to boil the sugar/water. Then I read your May article on hummingbirds [*Nature's Helicopters*, Page 14] and it states that you should boil the water/sugar. So, could someone please find out what is the correct answer to this problem? Do we boil the sugar/water or not?

*Pam Ellstrom, via Internet*

*Editor's note: According to author and resource scientist Andy Forbes, "What we do know is that boiling water helps slow the growth of mold in sugar water. Hummingbirds will not drink moldy water in most cases so there is not any reason to fear for their health, but quick-*

*er mold growth could make you have to change nectar in feeders more frequently.*

*"If the birds are emptying the feeders quickly, mold typically won't have time to accumulate in the first place, so for high-use feeders, mold is usually not a concern, and boiling water is probably not vital. However, given that there are a wide range of hummingbird feeders out there, I personally always err on the side of caution in general, and recommend boiling water first. It also provides the benefit of making the sugar dissolve quicker. So, I guess the*



*short answer is "no," even though "yes" is not really the wrong answer either. Also, you should always clean the feeders with a diluted bleach solution periodically, as I mentioned in the article."*

Thank you so much for the wonderful article and beautiful pictures of our "nature's helicopters" in the May issue. We enjoy the beauty of these delicate birds from our window here in Union.

Is the picture you have identified as an albino ruby-throated hummingbird an actual albino, or does it have the condition known as leucism? It looks like it has the normal eye color of a hummingbird rather than the red eye color of true albinism. Thank you again for the wonderful magazine and the information that you share regarding conservation in the state of Missouri.

*Kelly & Judi Beck, Union*

*Editor's note: There is some debate in the scientific community about what constitutes a leucistic bird versus a fully or partially albino bird. However, since the hummingbird depicted in our article has both pink eyes and pink feet (the pink eyes are more evident in other photos of this bird), lacking only a pink beak, our avian ecologist, Andy Forbes, feels confident in calling this bird a partial albino. Information on the debate concerning the differences between leucism and albinism can be found at this link: [www.birds.cornell.edu/ivory/pastsearches/2005\\_2006/stories\\_reports\\_0506/leucism](http://www.birds.cornell.edu/ivory/pastsearches/2005_2006/stories_reports_0506/leucism).*

## NEW MANAGEMENT

I am a member of my local FFA chapter and an avid outdoorsman. I thought *Champion Stewards* [May, Page 22] showed how important good land management is to wildlife management, how important the partnership is between agriculture and conservation, and also how bringing the two together can be mutually beneficial. Even better is how this competition reaches young people before they are fully engaged in agriculture or conservation jobs, teaching them important skills useful in either profession.

*Morgan Martz, Plattsburg*



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### Reader Photo FLY FISHING

David Comfort submitted this photo he took of a barred owl last summer. "I was fishing at Lake Jacomo, near Kansas City, using a top water Jitter Bug lure," said Comfort. "From behind me, while retrieving my lure, this large owl hit my lure while in the water. The owl was in the water and holding my lure in his claws. After about three minutes in the water with my lure in his claws, the owl let go and got up on the trunk of a tree next to him. Oh what a catch!"



This month check out our featured Web pages, or go online anytime to learn more about conservation at [www.MissouriConservation.org](http://www.MissouriConservation.org).



## FALL HUNTING

**[www.MissouriConservation.org/7442](http://www.MissouriConservation.org/7442)**  
*Fall Deer and Turkey Hunting Information*  
 has been updated and is online. This  
 booklet is available in standard HTML, as  
 well as Adobe Reader PDF format.



## TEACHER WORKSHOPS

***[www.MissouriConservation.org/8822](http://www.MissouriConservation.org/8822)***  
Teachers looking for innovative ways to include lessons about nature in their curriculum can find them at the Department's educator workshops.




# MASTER WILDLIFER

***www.MissouriConservation.org/16523***  
The Missouri Master Wildlifer program will give you the knowledge needed to improve the wildlife habitat on your property.



## ASK THE OMBUDSMAN

**Q** ■ I've heard that if you hold a skunk's tail down it can't spray. Is this true?



**A**■ According to Schwartz's *The Wild Mammals of Missouri*, skunks are reluctant to foul their fur, but they will when provoked and out of options. I know some folks who will testify that holding the tail down won't prevent getting sprayed. Interestingly, Mr. Schwartz does say that by holding the animal at the neck and base of the tail with the belly up, you can prevent the skunk from arching its back, which apparently is a prerequisite to spraying. He doesn't say how you keep from getting sprayed prior to taking the animal by the neck and tail.

Baby skunks are born naked with their eyes and ears closed and their scent glands present. Their eyes open at about three weeks, and Schwartz says they can assume a defensive posture at that time; other sources say the young are capable of spraying even sooner. Usually, skunks will provide warning prior to spraying. Foot stamping is one indicator, but the most common warning sign is a raised tail. Skunks are pretty good at sending the spray where they want, if the target is within five to ten feet. Being beyond that distance isn't pleasant either, but you might escape actually getting hit with the spray if you're further downrange.

*Missouri's Skunks* covers the animal's biology and remedies for problems. It's available online to download as a PDF at [www.MissouriConservation.org/257](http://www.MissouriConservation.org/257), at most Conservation Department offices, or by writing Nuisance Skunks, PO Box 180, Jefferson City, MO, 65102 or e-mailing [pubstaff@mdc.mo.gov](mailto:pubstaff@mdc.mo.gov).

Ombudsman Ken Drenon will respond to your questions, suggestions or complaints concerning Department of Conservation programs. Write him at PO Box 180, Jefferson City, MO 65102-0180, call him at 573-522-4115, ext. 3848, or e-mail him at [Ken.Drenon@mdc.mo.gov](mailto:Ken.Drenon@mdc.mo.gov).

on the  
**TV**

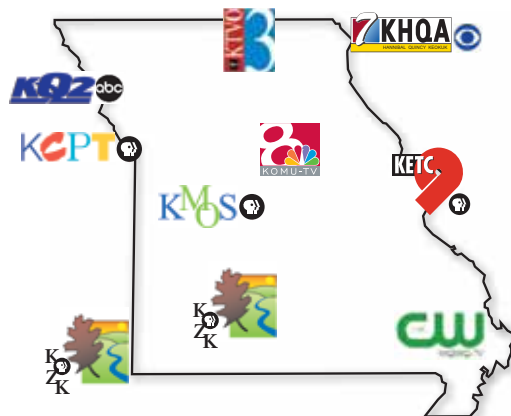
For additional show information and video clips,  
be sure to visit

**[www.MissouriConservation.org/8726](http://www.MissouriConservation.org/8726).**

**Check local listings for times in your area.**



Television  
the way  
nature  
intended!





## Species of Concern

## Clustered Poppy Mallow

## July is Blackberry Time

*Savor the leaves and berries from this summer gem.*

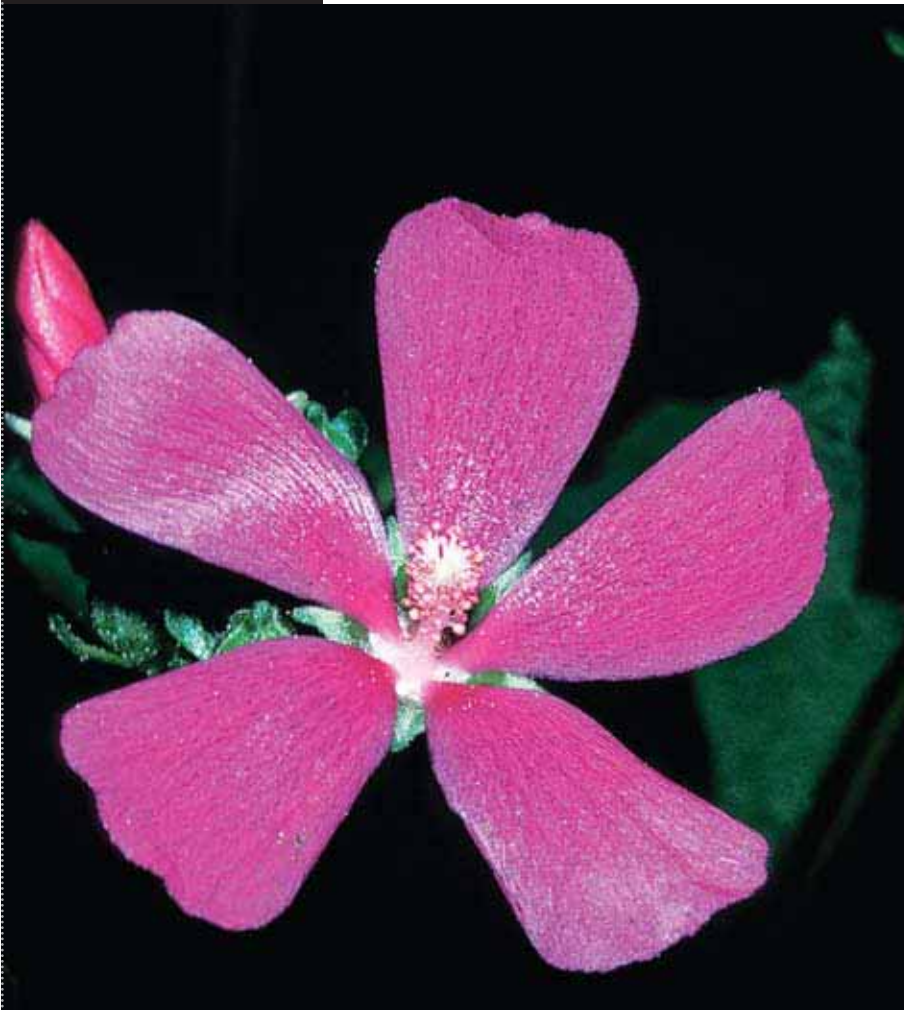
Independence Day is a landmark for pie eaters and tea drinkers as well as patriots. Glossy, luscious blackberries mature this month, and many people risk tick and chigger bites to get the makings of pies, cobblers and jam. Mowing around blackberry thickets makes picking easier, and DEET- or Permethrin-based repellents help keep biters at bay. Many berry-lovers are unaware that fresh or dried blackberry leaves make an amber-colored tea that herbalists say is good for ills from sore throat and diarrhea to ulcers.



## Turtle Nesting in Full Swing

*Little turtles are growing underground.*

Take a walk along a lake or river bank this month and you might see the tracks of female aquatic turtles hauling out to lay eggs. The action starts as early as March and continues into July, with courtship and mating occurring underwater in early spring. Alligator snappers don't breed until they are 11 to 13 years old. Females of some species maintain viable sperm in their bodies for several years after a mating. Female common snapping turtles lay clutches of 20 to 100 eggs. Most bury their eggs in sandy, sunny sites. In some turtle species, sex is determined by how warm the nest is. Solar incubation can take six months, but slow-developing turtles have the option of hatching the next year.



**Common name:** Clustered poppy mallow

**Scientific names:** *Callirhoe triangulata*

**Range:** Mississippi and Scott counties

**Classification:** Historical records only for Missouri

**To learn more about endangered species:** [www.MissouriConservation.org/8227](http://www.MissouriConservation.org/8227)

**T**HIS PERENNIAL WILDFLOWER once grew in the sand prairies of southeastern Missouri but was last documented in Mississippi County (near Charleston) in 1933. Most of its habitat has been lost to development or agriculture, but botanists are hopeful that it might eventually be relocated in Missouri. Considered vulnerable throughout its range, it can still be found today in western Illinois and western Wisconsin. Stems grow 2 to 3 feet tall in sunny locations with sandy soil. It might be found in grassy areas, old cemeteries or rocky, open forests. Although its five-petaled, rose-purple flowers resemble other poppy mallows, this species is distinctive in having leaves that are triangular in shape and are generally not lobed. For more information, visit [www.MissouriConservation.org](http://www.MissouriConservation.org), and search for "Missouri Plants of Conservation Concern."





## Powder Valley CNC

*Take a rest at this natural oasis in Kirkwood.*

St. Louis area residents needing a cool outdoor escape near home can visit Powder Valley Conservation Nature Center in Kirkwood. Three miles of shady, wooded trails (one wheelchair accessible) are perfect for morning or evening hikes. Through the heat of the day, sign up for nature programs and wander through exhibits, or relax in the wildlife-viewing area in air-conditioned comfort. Be sure to see the living beehive with plexiglass walls, the alligator snapping turtle and the indoor tree house with hidden plant and animal exhibits. Visit [www.MissouriConservation.org/a8709](http://www.MissouriConservation.org/a8709) for details.



## Missouri River 340

*This water event is fun for racers and spectators.*

If you are fascinated by events like the Tour de France and the Indianapolis 500, you probably would enjoy watching the Missouri River 340, the world's longest nonstop river race. Contestants have 100 hours to paddle from Kansas City to St. Charles. Stories of heartbreak and redemption abound as fierce competitors of all ages and walks of life push bodies and minds beyond the ordinary limits of endurance. Dehydration, bleeding hands, hallucinations and dodging barges in the dark all are part of the "fun." The start and finish

lines, checkpoints, river accesses and bridges along the way offer convenient places to witness the spectacle. Historic river hamlets along the way are filled with antique shops, pubs, restaurants, bed and breakfasts and other diversions for spectators. This year's event runs July 15 through 19. Divisions include men's and women's solo, tandem, mixed tandem and teams of three or more. The race draws top paddle-sport competitors from across the nation and is beginning to attract world attention. Full details are available at [www.rivermiles.com](http://www.rivermiles.com).

## Trail Guide



### THREE CREEKS CONSERVATION AREA



LOOKING FOR A hiking/biking/horseback riding destination to beat the summer heat? Try Three Creeks CA in Boone County. Steep valleys delay the arrival of scorching sun and provide welcome shade by mid-

afternoon. The 3-mile loop Turkey Creek Interpretive Trail is for hikers only. The 8-mile Three Creeks Horse and Bicycle Trail is open to hikers, bikers and riders. Primitive camping is allowed. The area has no facilities other than five parking lots. At this time of year, expect the area's namesake creeks, Bass, Bonne Femme and Turkey, to be dry except after a rain. This is because Three Creeks is a "karst" landscape with caves, sinkholes and losing streams. Details about this and other conservation areas with trails are listed in *Conservation Trails*, a 91-page book that is available for \$5 plus shipping and handling (and sales tax, where applicable), online at [www.mdcnatureshop.com](http://www.mdcnatureshop.com) or by calling toll-free 877-521-8632.

**Area name:** Three Creeks CA

**Trails:** Separate trails for foot, horse and bicycle traffic

**Unique features:** limestone bluffs, sinkholes, caves

**For more information:** Call 573-882-8388, ext. 227, or visit [www.MissouriConservation.org/a8315](http://www.MissouriConservation.org/a8315)





## TAKING ACTION

Mid-Missouri Chapter—Ruffed Grouse Society

**Group featured:** Mid-Missouri Chapter of the Ruffed Grouse Society**Group mission:** Established in 1961, the Ruffed Grouse Society is the one international wildlife conservation organization dedicated to promoting conditions suitable for ruffed grouse, American woodcock and related wildlife to sustain our sport hunting tradition and outdoor heritage.

**D**ESPITE DECADES OF research and restocking efforts, grouse populations continued to decline in Missouri. In 2002, the Mid-Missouri Chapter of the Ruffed Grouse Society recruited a team to find out why. The verdict was habitat loss, and the team became the River Hills Forest Habitat Project. Their goal would be to improve habitat for one of the last, best remnant ruffed grouse populations in the state, which occurred in portions of Callaway, Montgomery and Warren counties. The chapter has been instrumental in developing conservation partnerships, raising more than \$100,000 in funding, participating in surveys, sponsoring monitoring projects, serving on oversight committees and in other related capacities. Approximately 7,000 acres of privately owned forest habitat have been restored.

If not for the persistence of the Society, the River Hills Project might never have been envisioned or carried through. For their efforts, they were awarded the 2006 Conservation Partner of the Year Award by the Conservation Department's Private Land Services Division.

## Game for a day of fun?

*Meet pros and learn outdoor skills at the Youth Game Fair.*

ive animals, a helicopter, television personalities and the opportunity to try archery, fishing and shooting sports—the Land Learning Foundation knows what young people like. Free admission, lunch and attention to safety show they're hip to parents and mentors, too.

The Youth Game Fair will offer more than 50 displays and activities, including retriever work, duck calling, trapping, archery, fishing, knife making, trap shooting and more. Special features of the day-long event include a visit from the State Patrol helicopter at 10 a.m., entertainment by Ralph Duren, master of wildlife calls, and the chance to meet Bruce Horrell, co-host and co-producer of *Wingshooter*, Tom Nelson, host and producer of *American Archer*, and pro-fishermen John Sappington and Rick Lisek Jr.

The fair will be held Saturday, Aug. 23, from 9 a.m. until 3 p.m. at the Land Learning Foundation facility, four miles west of Triplett on Highway Z. Parents and accompanying mentors are welcome.

Please register by calling Marsha Leimkuehler at the Land Learning Foundation, 660-634-2240, or register online at [www.youthgamefair.com](http://www.youthgamefair.com). Registered youth age 17 and under will receive a free *Jakes* subscription, courtesy of the George Clark Missouri State Chapter of the National Wild Turkey Federation.





## Top Dollar

*Hunting and fishing top other sports in equipment sales.*

Does it matter that hunting and fishing generate more spending than other sports? It should, at least to community planners and government officials. The money spent on activities is an absolute



indicator of public sentiment and demand. This piece of financial data helps determine future priorities and resource allocations.

A National Sporting Goods Association report shows combined sales in hunting and firearms equipment and fishing tackle were \$5.93 billion in 2006. This exceeded the amounts spent for exercise (\$5.22 billion) and golf (\$3.66 billion) gear. Camping equipment sales were \$1.53 billion.

## Hands-On Frogging

*Put the squeeze on frogs for an old-fashioned tasty meal.*

There are plenty of legal ways to harvest frogs, but none is more exciting than grabbing them. This is pure digital entertainment, in the sense that you'll need to use your fingers. You'll also need a hunting or fishing permit.

Strike out after dark and move stealthily along the shore of a lake or farm pond or the bank of slow-moving stream. Use a strong flashlight or head lamp to search for the pinpoint reflections of frog eyes or the white gleam of a frog belly or throat.



Keep the light on the frog as you approach. Don't reach through the beam.

Grab with gusto; frogs are surprisingly strong. Keep harvested frogs in an escape-proof bucket or bag. If grabbing is too difficult or icky, use a net.

## Truman Lake Lands

## Scout it Out



**Name:** Harry S Truman Reservoir Wildlife Management Lands

**Location:** Benton, Henry, Hickory and St. Clair counties. The land can be accessed from numerous highways and roads.

**For more info:** [www.MissouriConservation.org/2930](http://www.MissouriConservation.org/2930)



LOOKING FOR SERENITY, beautiful scenery, rugged, unspoiled terrain, as well as shoreline access to the state's biggest reservoir? You'll find all of that and more at the Harry S Truman Reservoir Wildlife Management Lands.

A search for "Truman" on the Conservation Atlas at [www.MissouriConservation.org/2930](http://www.MissouriConservation.org/2930) shows 18 separate management units located in four different counties. Together, these units provide 54,000 acres of land open to almost every kind of outdoor recreation. The lands provide mile after mile of shoreline access. At Brush Creek an old discontinued gravel road ends at the lake, providing an informal boat ramp.

Access these lands from Conservation Department parking lots or from adjacent roads. Designated trails are few, but intrepid trekkers can hike along field trails or strike out cross-country. Anglers can walk the shoreline of Truman Lake, and hunters can park their boats and enter the lands to hunt. Generally, the lands fall under statewide regulations, although camping and horseback riding are not allowed. You can enjoy these activities at nearby Department of Natural Resources and Corps of Engineers lands and facilities.





## Snakes at Night

*Watch where you step for slithering snakes.*

As we sat in our bathing suits in a home-built sauna near a private lake one evening, a humongous black rat snake that we didn't know had been up in the rafters dropped down on one of the steamer's shoulders. We all burst out of there like shrapnel. I suspect the guy the snake landed on still bears psychological scars.

Being cold-blooded, snakes become more active as they warm, but only to a point. Daytime temperatures in summer can become too hot for some snakes, so they hole up in cool places during the day and become more active at night.

That's a good solution to sultry summer days for us, too, but snakes are better suited for nocturnal activity. Snakes, particularly arboreal (tree) snakes, have good night vision, especially for noticing movement. Their flicking tongues continuously sample the air, ground and water for odors that alert them to other snakes, prey or predators. Snake bellies are sensitive to vibration through the ground and the air. Venomous pit vipers have a heat-sensitive pit between the nostril and each ear. The pit pair enables them to detect warm-blooded prey, even in inky blackness.



## Everyday CNC

*Conservation nature centers calendar keeps you current.*

Their buildings might close for a few major holidays, but conservation nature center grounds provide interesting places to go and wonderful things to see throughout the year.

Burr Oak Woods (816-228-3766), Cape Girardeau (573-290-5218), Powder Valley (314-301-1500), Runge (573-526-5544) and Springfield (417-888-4237) conservation nature centers serve as hubs for outdoor recreation and education. Call your nearest nature center for information about activities and events, or visit [www.MissouriConservation.org/2361](http://www.MissouriConservation.org/2361) for a calendar of events.

## BIRDS OF A FEATHER



## Eastern Screech Owl

EASTERN SCREECH OWLS (*Otus asio*) work the night shift. They generally hunt from dusk to dawn or until their bellies are full. Their prey includes just about every living thing smaller than them, including bugs, worms, mice, moles, songbirds, small fish and crayfish. They often hunt from a perch in wooded, urban or suburban areas, although they might hover over an area before swooping down for prey, or they might capture insects in midflight.

One of their common calls sounds like a small horse whinnying. It's an eerie sound at night. Screech owls also trill, hoot and bark. Males call in a lower pitch than females.

Screech owls pair together for life, but if they lose a mate they may bond with another. Researchers report that a male screech owl might philander with a second female. Their "first mate" often responds by evicting the other female, laying eggs in her nest and incubating both clutches.

Screech owls can be gray or rusty colored. Like many owls, they are stocky and round-headed, but Eastern screech owls are small, usually less than 10 inches long. Unlike other small owls, screech owls have prominent ear tufts.

Although considered harmless, screech owls aggressively protect their nests. In an interesting turnabout, screech owls eat starlings, but starlings sometimes oust screech owls from their nests.



## Aquatic Invaders

*SNAKEHEADS ARE THE LATEST THREAT TO OUR WATERS.*

The discovery of northern snakeheads in east-central Arkansas in April emphasizes how vulnerable Missouri waters are to aquatic invasive species. The toothy Asian fish can exceed 3 feet in length. When young, the aggressive predator competes with bass, sunfish and other native fish for food. When it grows larger, it eats the competition. Other exotic invaders, ranging from zebra mussels to the microscopic didymo, or “rock snot,” threaten to disrupt sport fisheries that attract millions of dollars in tourist income to the Show-Me State annually. For more information about how to avoid spreading such aquatic curses, visit [www.MissouriConservation.org/n171](http://www.MissouriConservation.org/n171).



## Cut Smart to Protect Streams

*Logging and stream health can be compatible.*

Protecting wooded stream corridors doesn't have to mean turning them into tree museums. You can have profitable, healthy streamside forests by following best management practices. “BMPs” include:

- Leave an adequate streamside zone and never cut more than one-third of the mature trees in this area.
- Minimize stream crossings, and build them at right angles to stream flow in areas with hard, relatively level bottoms.
- Use rock or large stones to stabilize soil around culverts and permanent stream crossings.
- Keep logging debris out of streams.
- Locate portable sawmills away from streams.
- Collect oil and other equipment service residue for proper disposal.
- Locate log landings on stable, adequately drained soils and direct skidding away from the stream.
- Do not alter stream flow.
- Seed disturbed soil after logging.

For more about BMPs, visit [www.MissouriConservation.org/441](http://www.MissouriConservation.org/441) or write to MDC, Missouri Watershed Practice, PO Box 180, Jefferson City, MO 65102-0180 or e-mail [pubstaff@mdc.mo.gov](mailto:pubstaff@mdc.mo.gov).

## Stream Team



### Devil's Elbow Hellbenders



THIS STREAM TEAM'S name comes from a local landmark and from the sighting of a dead hellbender—an endangered species—by team members. “That motivated us to do what we could for the river so

we could see more of them,” said team leader Jerry Mitchell. The group of dedicated fishermen conducts several river cleanups throughout the year. That would be impossible without the help of Waynesville R-6 School students and Sellers-Sexton Ford, Mercury and Mazda. The auto dealer pays for disposing of old cars, hundreds of discarded tires and countless tons of other debris. “Pulaski County is beautiful and rugged,” said Mitchell. “When it rains, all kinds of things wash downstream. After this year's flood it will probably take us another five or six years to get things back the way we had them. We want to make our streams as clean as we can, for us and for our kids.”

**Stream Team Number:** 27

**Date formed:** May 1989

**Location:** Big Piney River

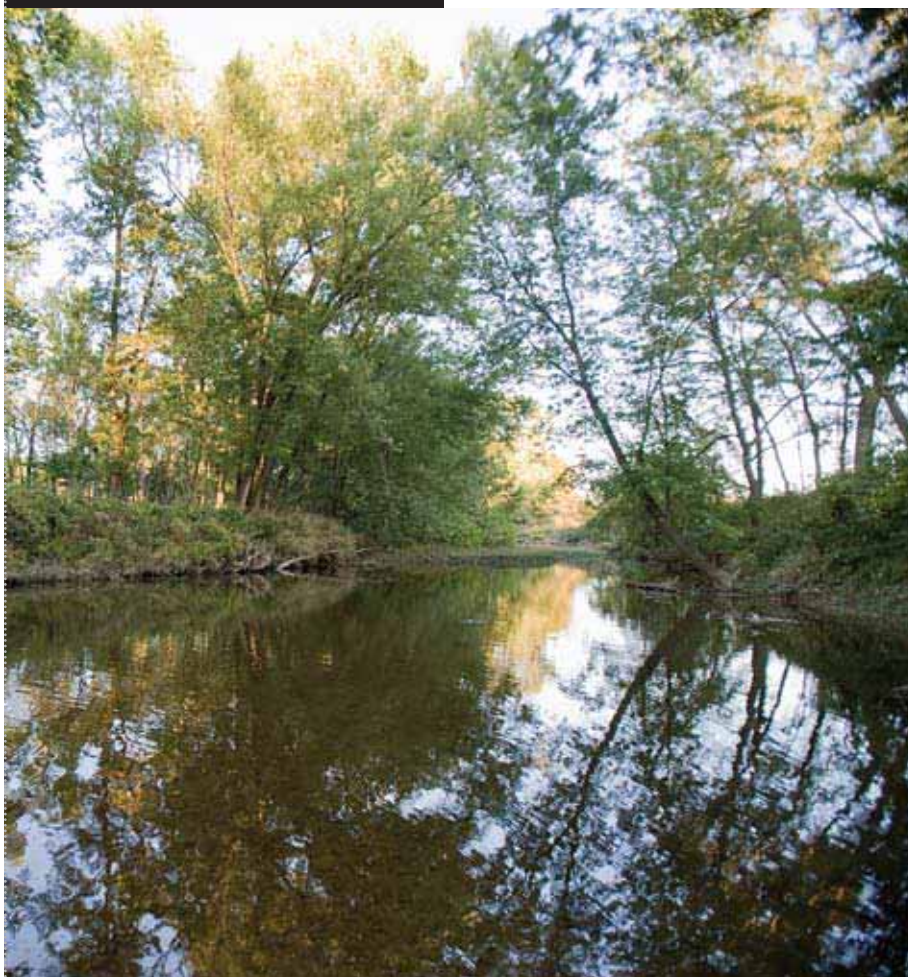
**For more info about Stream Teams:** [www.mostreamteam.org](http://www.mostreamteam.org)





## Our Glorious Forests

### ST. LOUIS REGION RIVER ACCESSES



**Number of accesses:** 31

**Major streams accessed:** Bourbeuse River, Boeuf Creek, Meramec River, Huzzah Creek, Courtois Creek, Big River, Mineral Fork, Missouri River, Mississippi River and Cuivre River

**For more information:** Call 573-468-3335



FLOATING A STREAM through an Ozark mountain forest can be a terrific way to escape summer's heat. Unfortunately, popular riverside parks and campgrounds won't get you away from the crowds. Escape both heat and crowded hotspots via Missouri Department of Conservation river accesses. You'll find more than 30 of them in the St. Louis

Region alone. They provide floaters with easy access to such scenic streams as the Meramec River and Huzzah and Courtois creeks. A secluded float trip will put you in touch with all the glories a summer forest has to offer—cool water, fascinating fish, melodious songbirds, fun-to-watch wildlife and breathtaking scenes. Three MDC publications can help you find a river access for your trip. Try the online atlas at [www.MissouriConservation.org/2930](http://www.MissouriConservation.org/2930), purchase a copy of Missouri's Conservation Atlas at your nearest MDC Nature Shop or pick up the Discover Outdoor Missouri Map at any MDC facility.

## Opinions Wanted

*Share your views on forest management with MOFRAC.*

The Missouri Department of Conservation, University of Missouri School of Natural Resources and the Conservation Federation of Missouri recently brought together representatives from 30 natural resource organizations to form the Missouri Forest Resources Advisory Council. The Council's purpose is to facilitate communication among all who are interested in Missouri forests to ensure long-term health, productivity and sustainability. For more information on MOFRAC and the issues it is considering, check out [www.MissouriConservation.org/17715](http://www.MissouriConservation.org/17715).



## We All Live in a Forest

*Don't bring gypsy moths home from vacation!*

When you're traveling through states infested with the gypsy moth this summer, take care that you don't return with one of Missouri's most unwanted stowaways. Since the 1800s, the oak-leaf-eating gypsy moth has spread from New England as far west as Wisconsin, northeastern Illinois and Indiana. Gypsy moths have not established in Missouri yet, but where they do, they're expected to severely damage our oak forests. To hold the line against gypsy moths, inspect your gear, including your vehicle and camper, before returning home from infested areas. Look for fuzzy, light brown egg masses or dark brown pupae.

If you find evidence of gypsy moths, notify the departments of Agriculture (573-751-5505) or Conservation (573-751-4115). For help identifying and destroying gypsy moths, visit [www.MissouriConservation.org/7282](http://www.MissouriConservation.org/7282).







## Control Muskrats

*Online video shows you how to set traps.*

Although they are important wetland ecosystem community members, muskrats and beavers can damage private ponds and lakes. Both muskrats and beavers burrow into dams and banks, and beavers cut trees and plug outlet tubes.

When burrowers become nuisances, trapping



is an effective way to control them. Our online video shows you how to use humane body-grip traps to solve

muskrat problems in 24 hours. Using larger traps, the methods work with beavers, too.

See the trapping demonstration at

[www.MissouriConservation.org/17648](http://www.MissouriConservation.org/17648).

## Stop Mowing Idle Areas

*July-August grassland birds rely on your “natural” areas.*

If mowing is one of your favorite summer pastimes, consider this: Studies have shown that quail populations double in areas where “recreational” mowing stops.

We recommend you learn to love the natural look in your idle areas, which provide cover for quail and other ground-nesting wildlife, such as songbirds and rabbits. Where quail are concerned, a mower should only be used to maintain fire lines and walking trails, and



to control weed growth in new shrub or grass plantings. If you allow your roadsides and crop borders to go

natural, you’ll increase quail chick survival. In the fall, you’ll enjoy more quail calls and better hunting.

## In Focus Areas, Neighbors Work Together for Quail

## On the Ground



Knox County landowners (from left) Mike McGinnis, Kevin Strange, Ray Prebe and John Ahonen have managed their adjoining properties for quail habitat.

“IF YOU ENJOY seeing wildlife, you have to put a little back,” says Knox County farmer Kevin Strange. Two cost-share programs—MDC’s Landowner Assistance and the USDA Conservation Reserve Program’s Practice 33—make it easy for him and his neighbors to “put a little back” for quail. “You don’t raise much on those marginal areas anyway,” he said. “Plus you’re making the land better, you’re saving soil—and you’re getting paid to do it.” Kevin’s farm is in the Knox County Quail Focus Area, one of 34 private land areas in Missouri that have exceptional potential to support quail. Here, MDC staff and conservation partners encourage neighboring landowners to manage on a landscape scale. “While every restoration effort counts,” says Wildlife Ecologist Aaron Jeffries, “collaborative projects on Quail Focus Areas will create sizeable, stable bird populations.” To see if your land is in a Quail Focus Area, contact your regional office (see Page 3 for phone numbers).





## Singing Insects CD and Poster

*Set features Missouri's musical wizards of the insect world.*

Sometimes the chorus of buzzes, trills and chirps on a Missouri summer night sounds as if it includes the voice of nearly every creature on earth. Close—insects are the largest group of animals on the planet, and they are the lead singers in summer's nightly choir. Crickets, katydids, cicadas and grasshoppers create the sounds of summer. Like birds, these insects' songs signal their identities. Learn to identify 20 common species of Missouri's singing insects with the *Singing Insects of Missouri* CD and full-color poster. Great for any classroom, child's room or study, the 22-by-34-inch poster includes fun insect facts. For example, did you know that without insects we would have no insect-pollinated foods such as apples, grapes and tomatoes? The set can be purchased for \$8.00 plus shipping and handling and sales tax (where applicable). To order, call toll-free 877-521-8632 or visit [www.mdcnatureshop.com](http://www.mdcnatureshop.com).



## Teacher Workshops

*Provide enrichment with a conservation focus*

Have fun, enrich your teaching and earn professional development contact hours at our Back to School Bash for Educators. Exciting, hands-on workshops in three beautiful locations will show you how to match conservation activities with any grade-level expectation or curriculum. Twin Pines Conservation Education Center in Shannon County holds its Bash July 29, from 9 a.m. to 3 p.m. Call 573-325-1381 by July 25 to register. Bray Conservation Area in Miller County has its Bash July 30, from 9 a.m. to 4 p.m. Call 573-368-2590, ext. 29. The Ozark Regional Office Bash is July 31, from 9 a.m. to 3 p.m. Call 417-256-7161, ext. 303, to register.

## NATURE ACTIVITY



NATURE ACTIVITY: NOPPADOL PAOTHONG; CD AND POSTER: CLIFF WHITE

## Cape Girardeau CNC's Insect Mania



WHEN IT COMES to the insect world, truth is often stranger than fiction. For example, did you know that insects account for more than half of all the living organisms on this planet? In fact, in North America alone, we

have more than 100,000 different types of insects. They live in almost every habitat in the world, and Missouri is no exception. From our cupboards to our backyards, insects creep, crawl and hop their way through our lives. Discover how various insects are specialized to live in Missouri's many different habitats and what they require to survive. Insects—they fascinate us, they surround us and they can be found in every habitat. But what would a summer evening be like without them? Hop into a world of insects as we focus on Blueprint for a Bug's Abode.

**Program:** Insect Mania—Blueprint for a Bug's Abode

**Who should attend:** Nature enthusiasts, families and youth groups

**When:** July 18, 7–9 p.m.

**Where:** Cape Girardeau Conservation Nature Center, 2289 County Park Drive

**For more information:** 573-290-5218. No registration required.



CLIFF WHITE



# A Fanatical Few

Lacking an obsession?  
Muskie may be  
the fish for you.

BY TOM CWYNAR



They call muskies the fish of 10,000 casts, and they're not exaggerating by much. In Missouri, where muskie fishing is better than in most other states, the average muskie angler spends about 32 hours on the water for each legal-size fish he or she catches.

Figure, for example, eight 4-hour trips to the lake. If it's spitting rain and the wind churns up whitecaps, all the better. On average, the angler will drag the boat home without having landed a legal-size muskie during seven out of eight of those trips.

When, finally, a monster fish does come to net, it doesn't get sliced up for Sunday dinner or stuffed with wadding and displayed over the fireplace. No, the lucky angler usually lets out a whoop, takes a picture or two, then promptly and carefully releases the trophy back into the water.

He or she will then begin fishing for the next one.

"Sanity has to be called into question whenever it comes to any kind of fishing," said Gary Neely, president of the Pomme de Terre Chapter of Muskies Inc., "but muskie fishing is a unique obsession."

Neely freely admits to being afflicted. He bought a homestead in Pittsburg, Mo., that overlooks Pomme de Terre Lake in large part because he knew muskies dwelt there. After moving in, he three times hired a professional

guide to help him catch one. Although the guide taught him lots about muskie fishing, he didn't learn a thing about muskie catching.

Neely then joined the local chapter of Muskies Inc., which gave him a large network of helpful muskie fishing friends, but still no muskies.

"If muskies are the fish of 10,000 casts," he said, "then the lake owes me about 20 of them."

Neely finally landed his first muskie. He said his second one came a little easier. He's caught many more since then, including, last June, a 43-incher—his personal best.

## Muskie Madness

If you haven't hooked into a muskie or seen one sizing up your lure—or your boat!—you might wonder what the fuss is all about.

Muskies (*Esox masquinongy*) are toothy, top-of-the-food-pyramid predators. They feed mostly on other fish, as well as—if you believe legends—ducks, muskrats and even small dogs. They also are huge. The world record is 67 pounds, 8 ounces. The Missouri record is 41 pounds, 2 ounces. In Missouri, the minimum legal size limit is 36 inches!

Long, lean, predaceous and pugnacious, muskies are a challenge to hook and a thrill to fight. Because they often follow lures back to the boat, anglers routinely swish a lure around in the water a few times before extracting it for another cast. When this tactic works and a muskie strikes at boatside on a short line, the odds favor the muskie. And, no matter which way the fight goes, it sure features a lot of commotion.

We wouldn't have muskies here (they aren't native to Missouri) if the Conservation Department didn't stock them. The state's muskie program began in 1966 when the Department first placed muskies in Pomme de Terre Lake. Through the years, lakes have been added to and subtracted from the muskie program. Currently, the Department stocks the fish in Pomme de Terre, Fellows, Hazel Creek and Henry Sever lakes, as well as Busch Area Lake 35.

Although all the lakes provide good fishing, Pomme de Terre is the muskie hub of Missouri. The lake draws anglers from around the state and has become a national attraction.

"We have a tremendous fishery down here," Neely said. "I think we have more fish per acre than you'll find in any other place I could name.

**Muskies Inc. Vice President Earle Hammond selects the lures he plans to use on a recent fishing trip. The lures for muskie are usually quite large and varied.**



DAVID STONNER



Even more than in what they call ‘premium’ muskies lakes up north and in Canada.

“And, you don’t need a passport to catch them.”

The Pomme de Terre Chapter of Muskies Inc. is part of a national organization dedicated to improving the sport of muskie fishing everywhere. The Pomme de Terre Chapter includes members from five states. Most of its 180 members, however, live in Missouri.

Neely said about a third of the members come from the Springfield/southwest area, another third from the Kansas City area and another third from St. Louis.

“Some of them drive down here for the meetings, even when there’s no fishing involved,” he said.

The club keeps members, who might undergo long stretches between catches, enthused about muskies. It’s especially helpful for club members who still are trying to catch their first muskie.

“What amazes me is the willingness of our members to tell you what they’re doing, where they are fishing, where their hot spots are, what lure they are using and how fast they are retrieving or trolling them,” Neely said.

The chapter’s annual Pomme de Tour events have institutionalized the practice of helping anglers. Two times a year, generally in the summer months, experienced members take members out on guided tours of one of the lake’s two major arms in a pontoon boat.

“We show them where to catch fish and on what,” said professional guide Earle Hammond. “We tell them what the bottom’s like, why the fish stay there and even show them brush piles that aren’t marked.”

Hammond also is a regional vice president for the national Muskies Inc. organization and is in charge of the chapter’s newsletter and Web site, [www.missourimuskie.org](http://www.missourimuskie.org). The latter contains enough fishing and club information to keep you busy for days.

To bring members together, the chapter fills its calendar with meetings, outings and gatherings. Meetings often include time for fishing or, during the winter months, expert instruction in fishing and fishing accessories.

The chapter also offers a guided fishing trip free to new members who sign up for three years, a bonus that by itself is worth more than the price of membership. The Guide for a Day



program offers the same expert instruction, plus dinner and a social hour for anyone who wants to learn more about muskie fishing.

The chapter also coordinates a team fishing event, called “Chapter Challenge,” where members compete against another chapter for bragging rights and modest prizes. These events are

**Members of Muskies Inc. catch a muskie at Pomme de Terre Lake.**





## Size Matters

The state record muskie is 49.5 inches long and was caught in the 1970s. Since then, state anglers have gone without “a 50,” even though muskies of this length are recorded in most states where muskies are found.

The difference may be a matter of genetics. In the early years of the muskie program, the fish stocked into Missouri waters have for the most part come from whatever sources were available, usually states to the north of us. Those strains of muskies may be better adapted to cooler climates and have an upper limit to growth here in Missouri.

The Conservation Department has been experimenting with the Kentucky strain of muskies, which in Kentucky lakes reach lengths of up to 53 inches. The first Kentucky strain muskies were stocked in Pomme de Terre and Fellows lakes in 2002. Those fish were 10–12 inches long when stocked and may soon provide a way for Missouri muskie anglers to break the magical 50-inch mark.

Download Missouri’s Muskie Management Plan at [www.MissouriConservation.org/14463](http://www.MissouriConservation.org/14463), or you can request a copy by writing MDC Muskie Management Plan, PO Box 180, Jefferson City, MO 65120, or e-mail [pubstaff@mdc.mo.gov](mailto:pubstaff@mdc.mo.gov).

for members only, but the club’s biggest event, its fall tournament, which takes place on Oct. 3–5 this year, is open to the public.

The tournament actually is two tournaments in one: a Friday tournament, and then a Saturday–Sunday tournament. Each has its own registration and winners. A highlight of the three-day event is the Saturday night banquet, which features a raffle with lots of fishing-related prizes.

Hammond, who retired from police work in Kansas City, said he’s fished the chapter’s annual fall muskie tournament every year since 1980.

“I just fished that first tournament on a lark,” he said, “and I caught a muskie—my first one. It was 18-inches long. We didn’t know if it counted or what, so we went to another boat and asked. They said it had to be 30 inches to count. While



we were talking, a guy pulled into the spot we were at, made one cast and caught a 43-incher. I'll never forget that."

## Preserving Muskies

Although Pomme de Terre chapter members are crazy about fishing, they are extremely sensible when it comes protecting the fish that are the source of their fun,

"Muskie anglers typically love their fish," said Fisheries Management Biologist Mark Boone, who served as the Conservation Department's muskie coordinator for nine years. "They know that there's not a whole lot of them out there compared to other fish, so they put them back so the rest of the muskie anglers, including themselves, have a chance to catch them again."

Boone, an avid muskie angler whose name appears frequently on the "Fish Caught" section of the club's Web site, said out of the thousands of muskies reported through the years as part of the Conservation Department's Show-Me Muskie Project, only a few were reported harvested.

"And those were just the fish that didn't revive after release attempts," he said.

Hammond agrees. "Pretty much everybody in the club releases all the muskies they catch. I believe muskie clubs were the first to start catch-and-release."

Club members also refrain from targeting muskies during the peak summer fishing months. That's because muskies caught in water warmer than 80 degrees, even if they are handled carefully, might not survive after release.

"The muskie anglers know this and promote it more than we do," Boone said. "They called their 2006 June tournament off because the water was warmer than normal and a few fish caught early in the tournament died. And, most of the time they'll fuss at each other if they find someone out there muskie fishing when it's too hot."

Fortunately, Pomme de Terre has plenty of good crappie, walleye and bass fishing to feed the members' fishing appetite during the summer, and, of course, there's the chapter's annual Kids' Fishing Day.

"I don't know who has more fun at Kids' Day, the kids or the adults," chapter president Neely said. "We tell our people to go borrow the next door neighbor's kids if necessary, and we take

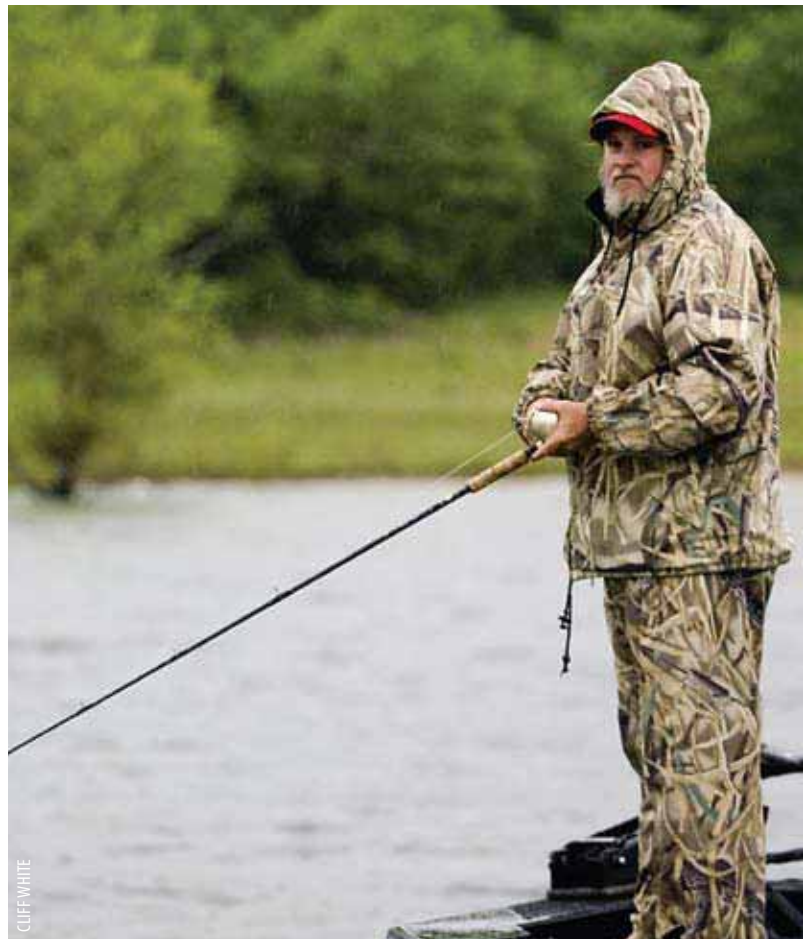
them over to a local dock and supply them with worms and we measure anything and everything they catch. They all go home with trophies and fishing rods. It's quite a program."

"We do more than just fish," Neely said. "We have a great working relationship with the Conservation Department and devote what funds we can to different projects that help the cause of muskie fishing and fishing in general."

Neely said chapter members have volunteered to install and map brush piles, helped with an ongoing lake revegetation project and even walked the banks of the lake to scare away herons preying on young muskies that had recently been stocked. The club has also contributed funds to construct nets to protect fish in hatcheries and has pledged a large chunk of money toward building a disabled-accessible fishing pier on the lake.

"We do this because we figure there has to be a purpose for your club," Neely said. "Otherwise you are just a group of people going fishing." ▲

**Muskie fishermen will often endure inclement weather in pursuit of their favorite fish.**



CUFFWHITE



NOPPADOL PAOTONG

Striped skunk

# SKUNK





**M**arvin was fat, friendly and pampered. Unconcerned with the gawking child in front of him, he sprawled in my great-uncle's large embrace, switched his bushy tail and flexed his long toenails in a stretch.

Part of me badly wanted to reach out and stroke his shiny ebony-ivory fur—the rest of me was frozen to the spot.

Uncle Pat laughed softly at my discomfort. He was pleased with the effect of his parlor-trick.

"That's not a cat," I finally whispered.

"No, not a cat," confirmed my uncle, "but he's alright."

And he was. I eventually did stroke Marvin's fur, if only tentatively, and it was a thrill. After all, there is no more feared predator in the urban neighborhoods of bucolic Vermont, where I was raised, than the common skunk. Petting one was not generally on the menu of options when they shot out from under porches or ambled purposely through the bushes.

Yet, for all of Marvin's charm and patience, and despite the many years he trundled around Uncle Pat's home, traumatizing and then wooing visitors, no one was ever truly comfortable in his presence. Marvin retained the full potential of his scent glands, and therefore commanded more respect than the average house pet.

I still feel that mixture of fascination and fear when I find a skunk in my path. And though I know now that wild animals should never, under any circumstances, be considered pet-worthy, for the sake of human and animal alike, I can't help but enjoy their antics from a distance. A good, upwind distance.

It's hard not to be amused by these readily identified, smallish mammals that waddle, stamp their short legs when angered and send the most fearless outdoor folks running. These characteristics have certainly factored into the skunk's infamy and its prominence in humor through the centuries, from the myths of indigenous people to popular films and children's programs.

Though prohibited as pets in Missouri, skunks can also be a joy and a nuisance outside your home. But more importantly, they fill a crucial niche in Missouri's web of flora and fauna.

# SENSE

Some  
answers  
in black  
and white

BY NICHOLE LECLAIR



## Little Stinkers

Skunks belong to the family Mephitidae, which means, aptly, “bad odor” in latin. Until recently, skunks were considered members of the weasel family Mustelidae. However, recent genetic findings have allowed them to be reclassified into their own family.

There are two species of skunk in Missouri, the striped skunk (*Mephitis mephitis* or “bad odor, bad odor”) and the Eastern spotted skunk (*Spilogale putorius* or “smelly spotted weasel” in Greek).

Both species are mostly black with white markings. The striped skunk has two white stripes on its back that meet at its head and tail. The spotted skunk’s markings aren’t spots necessarily, but a series of broken white stripes running the length of its body.

The striped skunk varies in length from 20–30 inches and weighs 3.5–10 pounds. The smaller spotted skunk is only 14–22 inches and weighs about three-quarters of a pound—considerably less than the average house cat. Though they rarely live longer than three years in the wild, skunks in captivity may reach 10 or more years of age.

Both species of skunk are notorious for their primary method of defense, discharging a noxious spray from two internal scent glands located at the base of their tail. These open to the outside through small nipples. They

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have voluntary control over these glands and can aim behind, to either side, or to the front by changing their posture and the direction of the nipples. The glands hold approximately 1 tablespoon of the foul musk, enough for five or six rounds. The secretion is not only smelly, but a powerful eye irritant. The mist can travel as far as 10 feet.

Without this defense, skunks would provide an easy meal for many predators. Luckily, they usually give a series of warnings before spraying. They might stomp their feet, bare their teeth, grunt, arch their back, raise their fur, and



most ominously—stand on their front legs and lift their tail. Any creature that stays for the end of this dramatic display gets the grand finale. Don’t depend on a skunk to be this patient, however.

## No Place Like Hole

The larger, more common striped skunk is found throughout the state, whereas the spotted skunk is rare. Only small numbers of this protected species are found in the Ozark highland region of southern Missouri. The





The spotted skunk is a rare protected species in Missouri.

JIM RABERT

home range of skunks is one-half to 2 miles in diameter, but they may only travel one-quarter to one-half mile in an evening of foraging.

Skunks prefer borders, brushy field corners, fence rows and open grassy fields broken by wooded ravines and rocky outcrops, where permanent water is nearby. They typically den in the ground, digging their own burrows or using sites excavated by other animals. They may also take up residence in rocky crevices, stumps, caves, wood piles, haystacks and under buildings and porches.

These last two locations do not add to the skunk's popularity, as their odor sometimes permeates the structure around them.

Although they do not hibernate, skunks acquire a layer of fat in the fall and spend more time in their dens as the weather grows colder. When temperatures near freezing, they may sleep for extended periods, only emerging to hunt during periods of warmer weather or in protected locations such as barns. Several skunks may den together during these colder months.

## Clean-Up Crew

Skunks are omnivores, meaning they'll eat just about anything. They'll consume a variety of plants and animals during the fall and winter, including carrion, but depend on insects in the summer. Grasshoppers, beetles and crickets are prime summer snacks, but white grubs, cutworms, tobacco worms and other insect larvae are also common foods. They will happily dig insect pests out of your lawn as well, but they might not be tidy about it.

Mice, rats, moles, shrews, ground squirrels, young rabbits, chipmunks, lizards, salamanders, frogs, earthworms, turtle eggs and the eggs of ground-nesting birds also feature on skunk menus.

Skunks leave their dens in the late afternoon or early evening and forage most of the night.

## Looking for Love

In late winter, sightings of skunks (and skunk remains) suddenly increase on the roadways. This is because skunk breeding season begins in February and males range widely, often leaving their territories in search of a mate.

The gestation period is seven to eight weeks, with females producing one litter each year. Litters of two to 16 young have been recorded, but the average size is four to six. Young skunks are called kits.

The female raises kits alone. They are born blind and without fur, and they will suckle for six to eight weeks,

until they can forage for themselves. They will stay with their mother until fall.

## Eyes on the Sky

Few creatures are willing to take a skunk for a meal—except those with a nonexistent or reduced sense of smell. As with most birds, great horned owls do not have a sense of smell, and they are the skunk's primary predator. Other avian predators may include hawks and eagles.

There is some evidence that coyotes, badgers, foxes and bobcats will also prey on skunks, but most of this information comes from researching the stomach contents of these animals. Therefore it is unknown whether the skunks were killed or eaten as carrion.

Skunk meat untainted with musk is good and tender eating, according to some people. However, most humans only take skunks accidentally, with their vehicles, leaving them on the roadways for more adventurous species to feast upon.

## What a Nuisance

Despite being effective mousers, cleaning up carrion and helping to keep insect pests in check, skunks do occasionally become a nuisance. They can damage lawns and gardens in search of food, raid chicken coops and domestic animals' food, tunnel under porches and buildings, and of course, cause a stink around homes. They might also establish their dens in places impossible to avoid for family and pets.

While most skunks are easily avoided and should be considered an asset to farms and neighborhoods, some precautions and management might be necessary.

The best methods for discouraging skunks from digging around and under structures include keeping the areas free of debris and brush piles and sealing openings in the foundations of houses and outbuildings. Only seal holes after making certain that no skunks remain under your foundation or porch. Not only is it cruel to starve the trapped animals, but they will release their scent when they die, and it will permeate the house.

Reducing skunks' access to food sources, as well as denying sites, will make your property less appealing. Picking up pet food at night, fencing chicken coops and collecting eggs daily, and securing your trash will encourage skunks to move on. For more tips on skunk-proofing your property, or how to remove existing populations, visit our Web site, [www.MissouriConservation.org](http://www.MissouriConservation.org), and type "skunk" in the search box. Or, call your regional Conservation Office (find phone numbers on Page 3). ▲

## SKUNK TONIC

*For use on people, clothing and pets.*

### Mix together:

1 quart of hydrogen peroxide

¼ cup baking soda

1 teaspoon liquid laundry soap or dishwashing detergent

The first two ingredients form an alkaline peroxide that chemically changes the skunk essence into sulfonic acid, an odorless chemical. The soap breaks down the oily skunk essence and makes it more susceptible to the other chemicals.

Chemicals in this formula are harmless, but try this solution at your own risk. To be safe, keep the formula away from the eyes, nose and mouth of people and pets.

**Do not store this mixture or put it in a closed container.** When kept in a warm place, the mixture may expand and burst the container.

This recipe and other tips can be found in *Missouri's Skunks* at [www.MissouriConservation.org/257](http://www.MissouriConservation.org/257).





INTELLIGENT

# Tinkering

Identifying Aquatic  
Conservation  
Opportunity Areas  
means no species  
left behind.

BY LYNN SCHRADER





NORPADOL PAOTHONG

The LaBarque Creek COA in the Ozark Highlands Subregion provides more than six miles of aquatic diversity.





Aldo Leopold, the father of wildlife conservation, said, “To keep every cog and wheel is the first precaution of intelligent tinkering.”

That wisdom saved me money and embarrassment as a young man when I found myself too deep into an old pickup engine overhaul and needed a professional mechanic to put the pieces back together; but more importantly it has guided my professional efforts as a fisheries biologist with the Missouri Department of Conservation.

What Leopold was getting at was that every species of plant and animal is interconnected and important to a healthy environment, even if we don’t know why. That’s why it’s so important to conserve every species.

Working to conserve aquatic plants and animals is an important part of my job. It’s a challenge, however, to act efficiently and practically when Missouri’s aquatic species include more than 200 fishes, 32 crayfishes, 65 mussels, 56 snails, 2,000 aquatic macroinvertebrates such as mayflies and stoneflies, and 400 water-related plants.

Missouri, with direction from the U.S. Fish & Wildlife Service, created a state Comprehensive Wildlife Strategy to meet this challenge. The approach of our CWS is to conserve all of Missouri’s native plants and animals by conserving the habitats they depend upon. For an overview of the CWS, see the October 2005 *Conservationist*.

It’s helpful to understand how the CWS process guides us to select the best places and opportunities.

**Many non-aquatic species, like this green heron, also benefit from efforts on aquatic COAs.**



NOPPADOL PAOTHONG



## The Process

We use the CWS process to help us select the best places and opportunities to protect Missouri's aquatic plants and animals. Our selection process also rests on four fundamental principles:

**Conservation of stream ecosystems is key to the conservation of aquatic species.** Trying to conserve each species, one by one, is not practical. Groups of interrelated aquatic species and the habitat they depend upon need to be defined and conserved together.

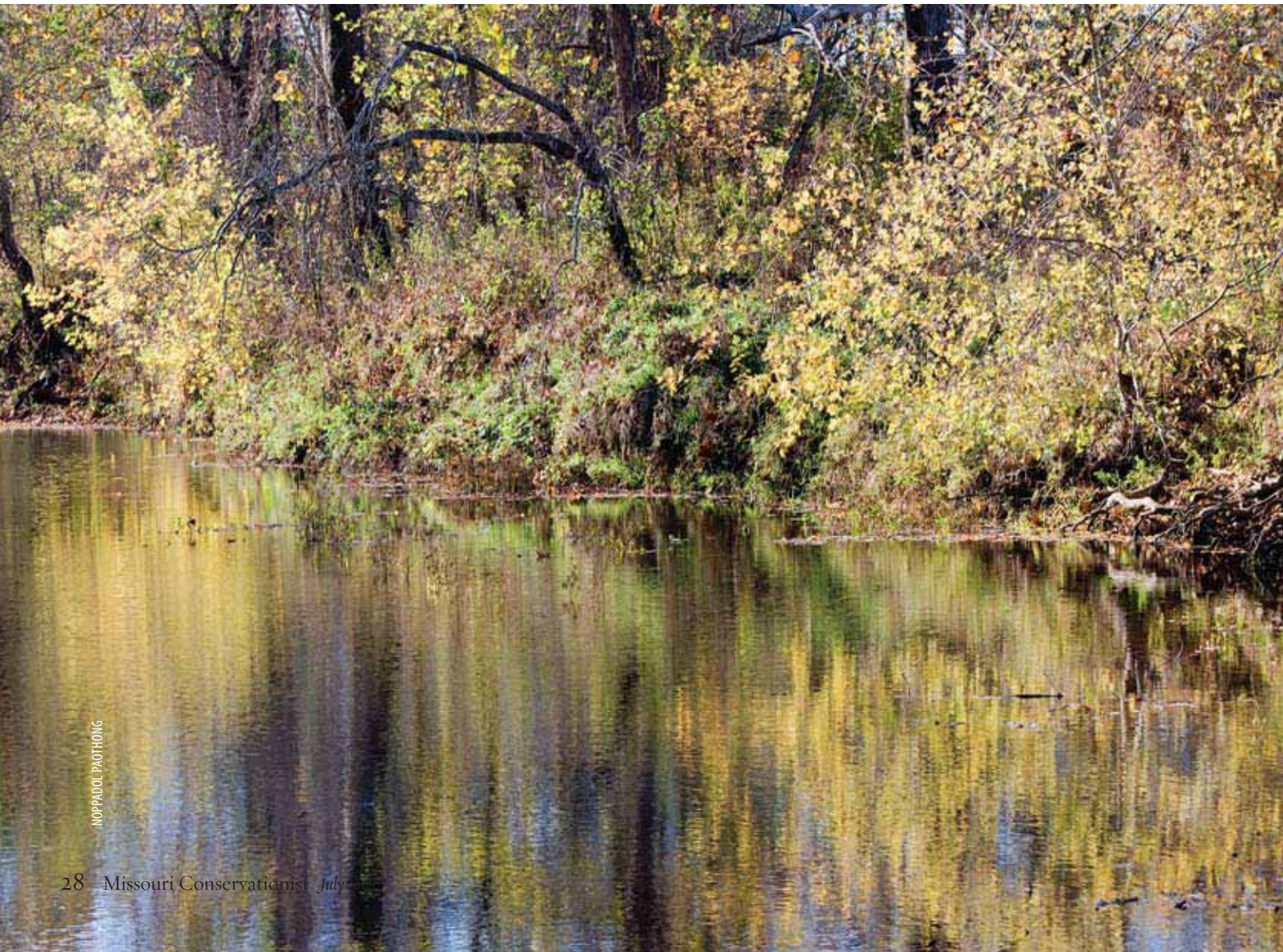
**Watersheds are the fundamental conservation units that define ecosystems for stream systems.** A stream is a reflection of the land that feeds it. You can no more disconnect a stream from its watershed than you can disconnect a tree from its roots.

Little Niangua River is another good example of an area that is thriving with more than 40 species of fish, nine mussel species and two kinds of crayfish.

**Efforts must be focused when human and financial resources for conservation work are limited.** Without focus, resources would likely be used in a piecemeal, fragmented manner and not be sufficient to produce desired results, especially given the many other services and areas that MDC maintains.

**Proactive conservation efforts are less costly and more likely to succeed than restoration actions.** History has shown us many times that an ounce of prevention is worth a pound of cure. We should therefore focus efforts when possible on keeping already healthy watersheds healthy.

Our next step was to categorize and compare the physical diversity of watersheds and the plants and animals that live in them.





We used the Missouri Aquatic Ecological Classification System, which was created by the Missouri Resource Assessment Partnership in cooperation with The Nature Conservancy. The system divides Missouri's watersheds and, thus, aquatic habitats into smaller and smaller distinct units based on their geology, soils, topography and other features until all the unique aquatic habitats in Missouri are identified.

Once we determined each unique type of aquatic ecosystem in Missouri, we could then choose a representative watershed for each type that presented the best opportunity for conservation success.

To further fine-tune the process, we considered the level of pollution, the amount of impervious surfaces, such as parking lots, and other aquatic resource stressors in the watershed. We also looked at the number of aquatic species present and the amount of public land within the watershed.

Ultimately, we chose watersheds with the greatest aquatic diversity, the least stress, and the best opportunity for proactive conservation.

## The Results

This process resulted in the selection of 158 streams and their watersheds. These stream systems have been called Aquatic Conservation Opportunity Areas because they represent the diversity of watersheds, aquatic systems and species throughout Missouri and provide our best opportunities to conserve representatives of nearly all of Missouri's aquatic life.

In the Central Plains Subregion, we identified 49 Aquatic COAs that capture the full array of aquatic communities and species representative of this region. The Union Ridge Aquatic COA is a terrific example in north central Missouri. Spring Creek flows through this COA and has a high-quality prairie/savanna watershed that is mostly in public ownership.

This prairie stream, with its narrow channels, rocky riffles and deep pools, supports nearly 30 species of fish, including channel catfish, brassy minnows and white suckers. It also supports the flat floater mussel, as well as grassland crayfish and papershell crayfish.

The Mississippi Alluvial Plains Subregion, Missouri's Bootheel, had only 15 Aquatic COAs. That's because this region is small and has fewer



**Largemouth bass (top) and longear sunfish (left) can be found in many Aquatic COAs around the state.**

landscape types than other regions. Because of heavy human impact in the area, there were not a large number of healthy streams to choose from, but those chosen are high-quality representative habitat types and excellent places to focus conservation efforts.

In this subregion, the Mingo COA provides the most diversity, with nearly 50 fish, four mussel and seven crayfish species represented. The historic vegetation consisted of bottomland forest, swamps and marshes.

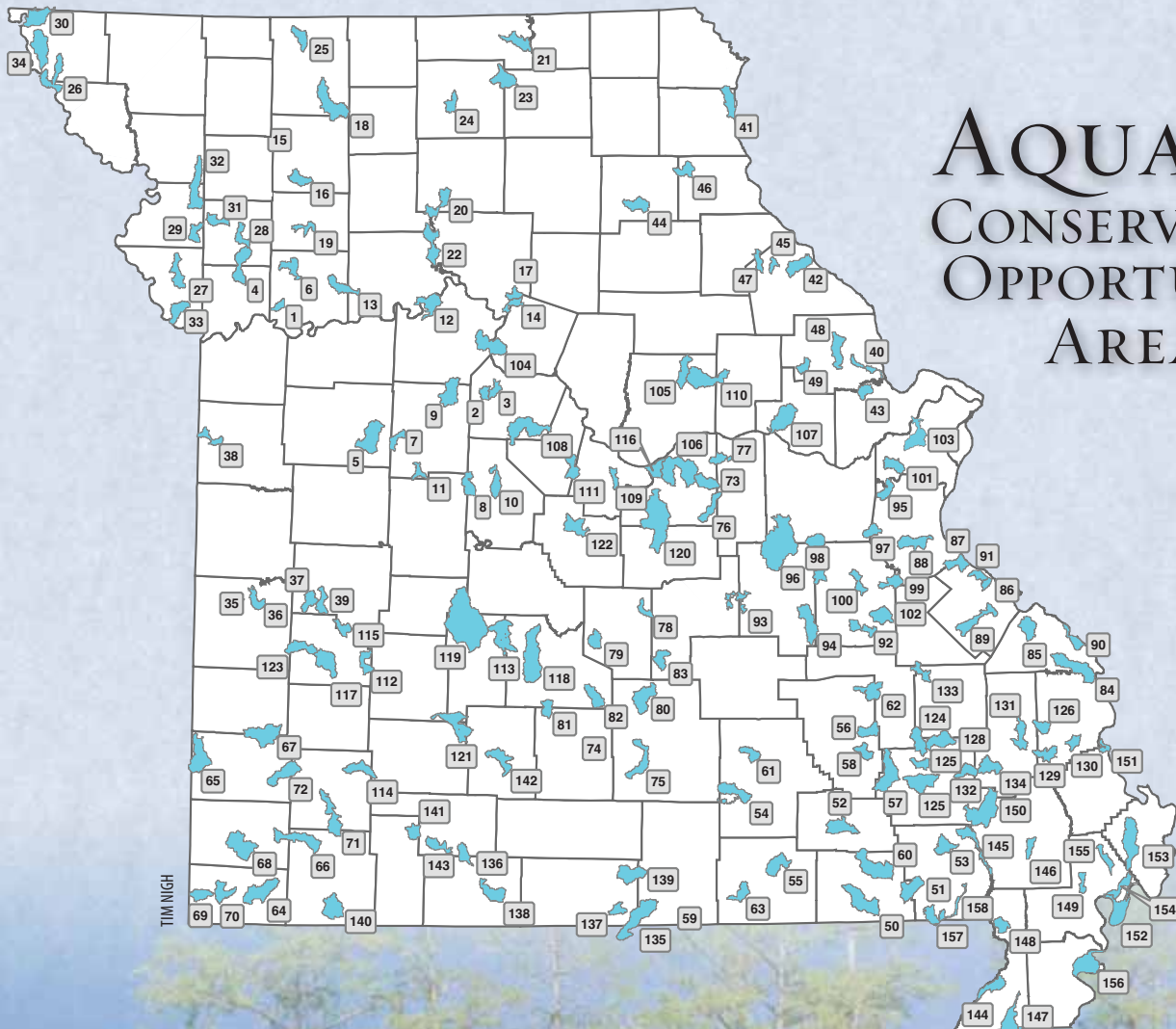
The Ozark Highlands Subregion, which contains many different landscapes and stream types, has the largest number of Aquatic COAs. Many of its 94 areas are publicly owned and are in relatively healthy condition.

A good example is the LaBarque Creek COA, which provides more than six miles of permanent flowing Ozark stream that supports more than 40 species of fish, including black bass and sunfish, and 10 mussel species. Its level of aquatic biodiversity and richness can be found nowhere closer to the St. Louis area. The LaBarque Creek watershed also supports one of the few sandstone landscapes in Missouri with much of its natural integrity still intact.

Another example in this subregion is the Little Niangua River COA. In addition to nearly



# AQUATIC CONSERVATION OPPORTUNITY AREAS



Mingo National Wildlife Refuge



1. Bogart Creek
2. Brush Creek
3. Chouteau Creek
4. Clear Creek
5. Clear Fork
6. Cockerel Creek
7. Crooked Creek
8. Haw Creek
9. Heaths Creek
10. Richland Creek
11. South Flat Creek
12. Van Meter Ditch
13. W. Fork Wakenda Ck.
14. Batts Creek
15. Denton Access
16. Dog Creek
17. Duck Lane
18. Fox Creek
19. Log Creek
20. Lower Locust Creek
21. Shoal Creek
22. Towstring Creek
23. Union Ridge
24. Upper Locust Creek
25. West Fork Big Creek
26. Deroin Bend Access
27. Jowler Creek
28. Little Platte River
29. Malden Creek
30. McElroy Creek
31. McGuire Creek
32. Muddy Creek
33. Parma Woods
34. Rock Creek
35. Douglas Branch
36. Hightower Creek
37. Little Clear Creek
38. Massey Creek
39. Simms Creek
40. Brushy Fork
41. Buck Run Creek
42. Grassy Creek
43. Lower Cuivre River
44. North Fork Salt River
45. Peno Creek
46. South Fabius River
47. Spencer Creek
48. Sugar Creek
49. Turkey Creek
50. Briar Creek
51. Buzzard Run Creek
52. Chilton Creek
53. Indian Creek
54. Leatherwood Creek
55. Little Hurricane Creek
56. Mayberry Creek
57. McKenzie Creek
58. Sinking Creek
59. South Fork Spring River
60. South Prong Little Blk River
61. Spring Valley Creek
62. Taum Sauk Creek
63. Warm Fork Spring River
64. Big Sugar Creek
65. Blackberry Creek
66. Capps Creek
67. Coon Creek
68. Hickory Creek
69. Lower Elk River
70. Town Hole Access
71. Upper Spring River
72. White Oak Creek
73. Contrary Creek
74. Dove Creek
75. Hamilton Creek
76. Little Third Creek
77. Lower Gasconade
78. Middle Gasconade
79. Mitschele Access
80. Paddy Creek
81. Parks Creek
82. Pine Creek
83. Spring Creek
84. Apple Creek
85. Blue Spring Branch
86. Frenchman Creek
87. Isle du Bois
88. Joachim Creek
89. Pickle Creek
90. Seventy Six
91. Stoples Hollow
92. Bootleg Access
93. Dry Fork Up. Meramec
94. Huzzah Creek
95. LaBarque Creek
96. Lower Bourbeuse
97. Maupin Creek
98. Middle Meramec
99. Mill Creek
100. Mineral Fork
101. Rockwoods
102. Wallen Creek
103. Creve Coeur Creek
104. Fish Creek
105. Harrison Branch
106. Loose Creek
107. Lost Creek
108. Moniteau Creek
109. Moreau River
110. Whetstone Creek
111. Wieneke Branch
112. Bear Creek
113. Bennett Spring
114. Billies Creek
115. Bluff Springs
116. Cadet Creek
117. Cedar Creek
118. Goodwin Hollow
119. Little Niangua River
120. Maries River
121. Pomme de Terre River
122. Saline Creek
123. Stinking Creek
124. Big Creek
125. Big Lake Creek
126. Bollinger Mill
127. Clark Creek
128. Coldwater
129. Headwater Diversion
130. Hubble Creek
131. Hurricane Creek
132. Iron Bridge
133. Millstream Gardens
134. Sweetgum
135. Bennetts Bayou
136. Blue Creek
137. Bridges Creek
138. Cane Creek
139. Crooked Branch
140. Roaring River
141. Tory Creek
142. Upper James River
143. Woods Fork
144. Ben Cache
145. Fisk
146. Holly Ridge
147. Hornersville
148. Indian Camp Slough
149. Little River
150. Mingo
151. Benton Hills
152. Donaldson Point
153. East Prairie
154. New Madrid Floodway
155. Swift Ditch
156. Wolf Bayou
157. Big Cane Creek
158. Coon Island

40 fish species, this COA is home to the Niangua darter, which is found only in Missouri. About nine mussel species and two crayfish species also are found there.

## Now What?

With the initial selection process complete, we now know what we have and where many of our best conservation opportunities exist.

The next step for successful, long-term conservation is for all local stakeholders (landowners, agencies, local governments, businesses, conservation groups, etc.) within a COA to voluntarily come together to plan how they want to conserve their aquatic resources for themselves and future generations.

The type of work necessary to conserve aquatic resources will vary from one COA to another, but stakeholders often face the following challenges:

- ▶ Controlling storm water and sediment erosion from the uplands to maintain or mimic a natural flow for the stream to support all stages (such as spawning) of the life cycle of each species
- ▶ Keeping floodplains open to handle flood water and provide nutrients to the stream
- ▶ Allowing a 100-foot-wide corridor of trees to grow along most streams to keep stream banks stable, provide stream habitat and shade the water to keep it cool
- ▶ Maintaining a natural, meandering stream channel to create the diverse, deep pool and shallow riffle habitat necessary for aquatic life
- ▶ Providing water treatment facilities as needed to protect water quality and prevent excessive nutrients and other pollutants from entering the stream
- ▶ Monitoring the aquatic life and habitat of COAs and the successes and failures of conservation projects; such monitoring allows continual evaluation and refinement of conservation efforts.

Local, dedicated and intelligent tinkering will help conserve these special ecosystems in Aquatic Conservation Opportunity Areas and preserve the great diversity of Missouri's aquatic treasures. It's been said that diversity is the spice of life, but when it comes to our aquatic resources, diversity is the main ingredient. ▲

# Hunting and Fishing Calendar

## FISHING

	OPEN	CLOSE
Black Bass (certain Ozark streams, see the <i>Wildlife Code</i> )	5/24/08	2/28/09
impoundments and other streams year-round		
Bullfrogs and Green Frogs	Sunset	Midnight
	6/30/08	10/31/08
Gigging Nongame Fish	9/15/08	1/31/09
Trout Parks	3/1/08	10/31/08

## HUNTING

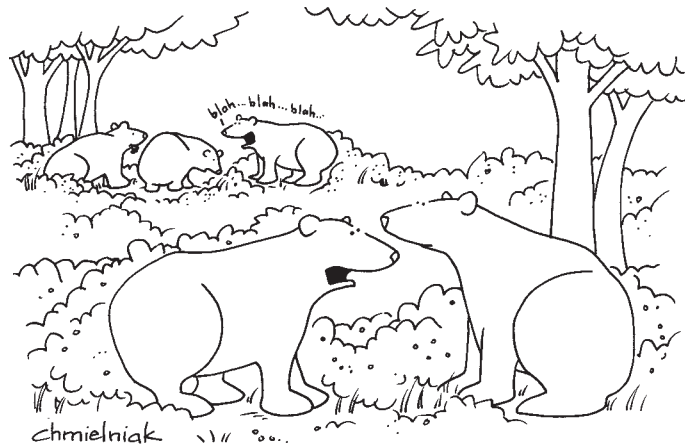
	OPEN	CLOSE
Coyotes	5/12/08	3/31/09
Crow	11/1/08	3/3/09
Deer		
Archery	9/15/08	11/14/08
	11/26/08	1/15/09
Firearms		
Urban	10/3/08	10/6/08
Youth	11/1/08	11/2/08
	1/3/09	1/4/09
November	11/15/08	11/25/08
Muzzleloader	11/28/08	12/7/08
Antlerless	12/13/08	12/21/08
Dove	9/1/08	11/9/08
Furbearers	11/15/08	1/31/09
Groundhog	5/12/08	12/15/08
Rabbits	10/1/08	2/15/09
Ruffed Grouse	10/15/08	1/15/09
Sora and Virginia Rails	9/1/08	11/9/08
Squirrels	5/24/08	2/15/09
Teal (if authorized)	to be announced	9/21/08
Turkey		
Archery	9/15/08	11/14/08
	11/26/08	1/15/09
Firearms	10/1/08	10/31/08
Wilson's (common) Snipe	9/1/08	12/16/08
Woodcock	10/15/08	11/28/08

## TRAPPING

	OPEN	CLOSE
Beaver and Nutria	11/15/08	3/31/09
Furbearers	11/15/08	1/31/09
Otters and Muskrats	11/15/08	see <i>Wildlife Code</i>

For complete information about seasons, limits, methods and restrictions, consult the *Wildlife Code* and the current summaries of *Missouri Hunting and Trapping Regulations* and *Missouri Fishing Regulations*, the *Fall Deer and Turkey Hunting Regulations and Information*, the *Waterfowl Hunting Digest* and the *Migratory Bird Hunting Digest*. For more information visit [www.MissouriConservation.org/8707](http://www.MissouriConservation.org/8707) or permit vendors.

The Department of Conservation's computerized point-of-sale system allows you to purchase or replace your permits through local vendors or by phone. The toll-free number is 800-392-4115. Allow 10 days for delivery of telephone purchases. To purchase permits online go to [www.wildlifelicense.com/mo/](http://www.wildlifelicense.com/mo/).



"I'd avoid foraging for blueberries with Erma unless you can stand her going on and on about antioxidants."

## Contributors



TOM CWYNAR is a writer/editor for the *Conservationist* who often writes about fishing Missouri waters. Tom said he has a variety of interests, but that he generally likes the outdoors more than the indoors and activity more than passivity. He is currently trying to teach his new little white boat to catch fish.

Ever since her first toy "gunk" of childhood, NICHOLE LECLAIR has been entertained by skunks of all stripes (and spots). This does not, however, mean that she is above hollering "yearrrh!" when suddenly face to tail with one at close range. She lives in Osage County, where there is no shortage of *Mephitis mephitis*.



LYNN SCHRADER has worked across north Missouri during his 22 years with the Conservation Department and is now the St. Louis Region fisheries supervisor. He and his wife stay busy with their two kids playing sports and finding ways to get enough exercise for a treat-loving 90-pound Labrador retriever.



## TIME CAPSULE

**July 1958**

*How to Fish Lake of The Ozarks* was written by Herschel Bledsoe and Agent Claude Ponder about fishing the "mecca of the Midwest for years," the Lake of the Ozarks. This lake has been the busiest fishing hole in Missouri since it was built in 1932. Its 1,375 miles of rugged shoreline and 129-mile main channel makes it a challenge to any angler. As a man-made lake, the lake is furnished in large numbers and size with largemouth black bass, white bass, spotted bass, walleye, crappie, rock bass, flathead, bluegill and channel catfish, carp, drum, paddlefish and buffalo. Crappie make up 80 to 90 percent of the fish that are caught. Because of its convenient location in the central part of the state, the Lake of the Ozarks is "accessible to all Missourians and anglers from surrounding states." —*Contributed by the Circulation staff*



## AGENT NOTES

*The bridge helped me understand more about nature and about myself.*

I GREW UP on an 80-acre farm south of Sedalia. Bordering our farm was Spring Fork Creek. My brother and I would walk down the gravel road to the concrete bridge that crossed the creek to hang out and play.

I recall watching small clouds of minnows darting around the surface of the water and green sunfish hollowing out nest sites in the gravel. When largemouth bass cruised the creek, all the other fish would swim away. A large snapping turtle that lived under the bridge would lumber around the creek attempting to catch unsuspecting fish that would swim too close.

My brother and I would wade in the creek and overturn rocks in search of crayfish. When we would find one we would hold a coffee can behind it and it would swim backward into the can to avoid us. We would also overturn rocks on the creek bank to uncover earthworms to toss into the creek for the fish to eat.

We learned a lot about nature while spending time at the bridge. We learned where different fish lived in the creek, where they searched for food, and how they interacted with each other. Spend some time sitting on a bridge with a kid. Show and tell them about life in the water, and on land. The experience will touch their lives forever, as it did mine.

We are now accepting applications for the 2009 Conservation Agent Training Class. Click on the job listing at [www.MissouriConservation.org/2129](http://www.MissouriConservation.org/2129) to see qualifications and apply.

Thomas M. Strother III is the regional supervisor for the Protection Division in the Central Region. If you would like to contact the agent for your county, phone your regional Conservation office listed on Page 3.



## behind the CODE

*"Prohibited Species" means no wiggle room on possession.*

BY TOM Cwynar

You'll find some unusual names, such as the mitten crab, the multimam-mot rat and the red whiskered bul-bul, listed under the Prohibited Species section of the *Wildlife Code* (CSR 10-4.117). Their inclusion puts a regulatory "Do Not Touch!" on each of the species or, in some cases, whole genera. These species "may not be imported, exported, transported, sold, purchased or possessed alive in Missouri without written approval of the director."



The prohibited species regulation first appeared in the 2006 *Wildlife Code*. Most of the species listed are the "worst of the worst of invasive species," according to the Conservation Department's Invasive Species Coordinator Tim Banek. Protection Division Chief Larry Yamnitz said the regulation allows tighter control of proven harmful species amid increased public interest in culturing or possessing exotic animals.

SNAKEHEAD fish, for example, are a serious ecological concern because they are a top-level predator with no natural enemies to curb their population growth. What's more, they have the ability to "walk" from one water body to another by wriggling across dry land. Snakehead fish have been spotted in more than 20 states, usually as a result of escapes or releases from aquaria, but we don't want them to come to Missouri.

Some species listed, such as zebra mussels and mysterysnails, are already in Missouri. The intent of the regulation is to prevent their spread into new habitats.



## “I AM CONSERVATION”

Jim and Wendy Davis and their 2-year-old daughter, Sydney, of O’Fallon, spend almost every weekend between April and October hiking, camping or trailbuilding. “Sydney was 6 months old when we took her on her first trip, and she just loved it!” said Wendy. “When we saw how much she liked being outside, that just reinvigorated our own passion for it.” To learn more about conservation activities, visit [www.MissouriConservation.org](http://www.MissouriConservation.org) — PHOTO BY DAVID STONNER



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